Figs. 9 and 10). The rod 154 is supported by a linear bearing 155 for sliding movement along the longitudinal direction of the rod 154, with the linear bearing 155 being fixedly mounted on the support plate 141. The rod 154 is driven for reciprocal linear motion by means of a drive motor 156 and a suitable drive mechanism of a known type (not shown). The drive mechanism may be a rack-and-pinion drive comprising rack-teeth formed on the rod 154 and a pinion in engagement with the rack-teeth and driven by the drive motor 156 for rotation in both directions. Such a drive mechanism may be preferably housed within the casing of the linear bearing 155. The position of the rod 154 and thus the position of the movable hopper 150 is detected by a pair of position sensors 147a and 147b, which are mounted on the support plate 141 at position spaced apart in the moving direction of the rod 154.

Delete the paragraph bridging pages 25 and 26 and insert therefor:

With reference again to Figs. 4 and 6, the measure unit 16 comprises: a horizontal support plate 161, which is fixedly mounted on the upper beams 113 of the frame 11 and extends over the transportation path of the carrier 223; four bearing sleeves 162a fixedly mounted on the support plate 161; and four vertical rods 162 supported by the respective bearing sleeves 162a for vertical displacement. The four bearing sleeves 162a are provided on the support plate 161, with two of them being located at each end (each of the right- and left-hand ends as viewed in Fig. 4) of the support plate 161. The measure unit 16 further comprises: a connecting plate 163 secured to the upper ends of the vertical rods 162; a load sensor 164 secured to the support plate 161 at the middle point of the support plate 161; and a pusher 165 fixedly attached to the connecting plate 163 for pushing down the top end of the load sensor 164. Each of the vertical rods 162 has a support bar 166, which is connected at the lower end of the associated vertical rods 162 and extends horizontally toward the transportation path of the carrier 223. Vertical guide rods 167 for guiding counterweights 168 in vertical direction are fixedly connected to the support plate 161. A support bar 166 extending toward the carrier is fixed to the lower end of each of the vertical rods. The support bars 166 are connected to the counterweights 168 through cables 169, such that the total weight of the vertical rods 162, the connecting plate 163, the sintering mold and the tray is substantially balanced with the counterweights 168, in order to prevent any excessive load from acting on the load sensor 164. In operation, a sintering mold

may be brought to the measuring position of the measure unit 16 each time the powder filling operation has been effected to the sintering mold. Alternatively, a sintering mold may be brought to the measuring position only when the powder filling operations for all the powder layers to be formed in the sintering mold have been done. In either case, when the sintering mold is brought to the measuring position by the carrier 233, the lift motor 239 in the carrier 223 is operated to lift down the receiving plate 230. When the receiving plate 230 is lifted down below the support bars 166, the sintering-mold-and-tray placed on the receiving plate 230 is passed to the support bars 166. The sintering-mold-and-tray is now supported solely by the support bars 166, and the total weight of the amounts of powder materials having been filled into the sintering mold so far is measured by the load sensor 164, which excludes the weights of the vertical rods 162, the connecting plate 163, the tray J, the sintering mold al and the lower press core e. Further, from the measurements thus obtained, the weight of the amount of powder material last filled into the sintering mold can be determined. The measurement operation may be performed either before or after the pressing operation which is described in detail below.

Delete the paragraph bridging pages 26, 27 and 28 and insert therefor:

With reference to Figs. 12 and 13, the press unit 18 comprises a rectangular base plate 181 which is separate from the frame 11; four upright columns 182 fixedly mounted on the base plate 181, one at each corner of the base plate 181; an upright pedestal 183 fixedly mounted on the base plate 181 at the center thereof; a top plate 184 supported by and connected to the upper ends of the columns 182; a press guide 185 guided by the columns 182 for vertical movement between the top plate 184 and the base late 181; an upper plunger or press member 186 fixedly mounted on the press guide 185; an hydraulic cylinder 187 secured to the top plate and having a piston rod 187a connected to the press guide 185. The base plate 181 is provided with a pair of guide rails (not shown) mounted thereon, the guide rails forming an elongation of the guide rails 221 mounted on the under frame members 111 of the frame 11, so that the carrier 233 may be operated to run not only along the guide rails 21 on the frame 11 but also along the guide rails on the base plate 181. The pedestal 183 has a top end 183a which is so shaped and sized as to be received in the opening 131 of the receiving plate 130 of the carrier 223 as well as in the opening H formed in the tray J. The pedestal 183 is of a hollow cylindrical shape and has a cutout 191

formed therein, as shown in Fig. 13B. The cutout 191 faces the direction from which the carrier approaches the pedestal 183 and forming a through path between the inside and the outside of the hollow cylindrical pedestal 183. When the carrier 223 has reached the pressing position of the press unit 18, the cutout 191 allows a part of the carrier 233 to enter the inside space of the pedestal 183, which part includes the cylindrical stem portion of the push-up member 234, the drive motor 235, the central portion 232a of the mount plate 232 and the central portion 233a of the lift plate 233 (see Figs. SC and 5D). Further, when the carrier 223 is in this position, the top flange 234b of the push-up member 234 extends above the top, circular edge of the pedestal 183, with the axis of the push-up member 234 and being substantially in alignment with the axis of the pedestal 183. In addition, when the carrier 223 is in this position, the pedestal 183 is received in the recess or cutout 233' formed in the lift plate 233 of the carrier 223 (Figs. 5B and 5D). The upper plunger or press member 186 has a lower end so shaped and sized as to be fitted tight in the bore b of the sintering mold al. The press unit 18 further comprises a pair of hydraulic cylinders (lift cylinders) 188 mounted on the base plate 181 through respective brackets 189 at positions on opposite sides of the pedestal 183. The hydraulic cylinders 188 are supported by the corresponding brackets 189 with their piston rods 188a extending upward. A pair of support members 190 are attached to the upper ends of the piston rods 188a, respectively.

Delete the 1st full paragraph on page 28 and insert therefor:

In operation, when the press unit 18 is in a condition to wait for a sintering mold to arrive, the press guide 185 having the upper plunger 186 mounted thereon is placed at its upper position by means of the hydraulic cylinder 187, while the lift cylinders 188 are controlled such that their piston rods 188a are in their retreated position. When the carrier 223 arrives at the pressing position of the press unit 18, the pedestal 183 is received in the recesses 224',232' and 233' of the base plate 224, the mount plate 232 and the lift plate 233, respectively, while the cylindrical stem portion of the push-up member 234, the drive motor 235, the central portion 232a of the mount plate 232 and the central portion 233a of the lift plate 233 together enter the inside space of the pedestal 183 through the cutout 191. When the carrier 223 has reached the pressing position, the axis of the push-up member 234 is substantially in alignment with the axis of the pedestal 183 and the top flange 234b of the push-up member 234 extends above the top

edge of the pedestal 183. Then, the lift motor 239 is operated to lower the receiving plate 230 of the carrier 223 and thus lower the tray J on which a sintering mold al is placed, until the under surface of the top flange 234b of the push-up member 234 come into engagement with the top edge of the pedestal 183, when the top surface of the top flange 234b remains in contact with the bottom surface of the lower press core e fitted in the sintering mold, so that the sintering mold al is thereby supported with the lower press core e fitted therein and the amount of powder material filled therein. Then, the hydraulic cylinder 187 is operated to lower the press guide 185 and the upper plunger or press member 186 along the columns 182, so that the powder material filled into the sintering mold is pressed by the upper plunger 186 at a desired pressure and for a desired length of time.

Delete the paragraph bridging pages 28 through 31 and insert therefor:

When the pressing operation has been done, the powder material in the sintering mold has been more or less compacted, so that the top surface of the resultant powder compact has been sunk from the initial level, i.e., the level of the top surface c of the sintering mold. This sinkage can be measured by detecting the relative vertical displacement of the bottom surface of the upper plunger 186 with respect to the top surface of the sintering mold. The detection may be achieved by using a suitable sensor, such as a touch sensor. The sinkage produced by the pressing operation is much less than the thickness of any powder layer which may be possibly formed next in the sintering mold. Therefore, if another powder layer is to be formed on the layer of the powder compact, the powder compact has to be displaced downward relative to the sintering mold in order to allow for the powder filling operation for the next powder layer (the sinkage produced by compaction of the powder compact plus the subsequent downward displacement of the powder compact relative to the sintering mold will be equal to the thickness of the next powder layer). Thus, with the lower press core and the powder compact being kept pressed between the pedestal 183 and the upper plunger 186, the lift cylinders 188 are operated to extrude their piston rods 188a upward, with the result that the support members 190 attached to the upper ends of the piston rods 188a come into engagement with the receiving plate 230 of the carrier 223 so as to lift up the receiving plate 230. Simultaneously, the hydraulic cylinder 187 is operated to lift up the upper plunger 186 at the same rate as the receiving plate 230, so that the

powder compact is kept pressed. Further, at the same time, the lift motor 239 is operated in direction to lift up the receiving plate 230 (the push-up member 234 is lifted up together with the receiving plate 230). The operations above continue until the receiving plate 230 of the carrier 233 is lifted up to reach the level at which the receiving plate 230 is maintained during conveyance of a sintering mold. When the level is reached, the upper plunger 186 and the push-up member 234 are now displaced downward relative to the sintering mold, with the powder compact being kept pressed therebetween, until the amount of the downward displacement of the push-up member 234 reaches the desired amount (which depends on the selected amount of powder material to be filled for the next powder layer). In this manner, the powder compact is displaced downward relative to the sintering mold al. The amount of the downward displacement of the powder compact can be detected by measuring the displacement of the push-up member 234. In the case where the powder compact to be formed is a non-multi-layered powder compact so that only a single powder layer needs to be formed in the sintering mold (such a powder layer usually has a greater thickness than any powder layer in a multi-layered powder compact), the amount of the upward displacement of the tray and the sintering mold thereon is controlled such that the vertical position of the powder compact relative to the sintering mold will be the most suitable position for the sintering operation subsequently performed. In order to perform another powder filling operation for the next powder layer following the powder filling and pressing operations for the previous powder layer, the push-up member 234 is displaced downward relative to the receiving plate 230 by the distance corresponding to the thickness of the next powder layer. (However, the pushup member 234 may be further lowered to the waiting position if the under press core need not be supported during the next powder filling operation.) Also, in the case where the powder compact to be formed is a multi-layered powder compact so that a plurality of powder layers need to be formed in the sintering mold, following the powder filling and pressing operations for the last powder layer, the amount of the upward displacement of the tray and the sintering mold thereon is controlled such that the vertical position of the powder compact relative to the sintering mold will be the most suitable position for the sintering operation subsequently performed. It is noted that the fit of the upper plunger 186 in the bore of the sintering mold is a tight fit (in order to prevent escape of any powder which could otherwise

occur through a clearance between the bore and the upper plunger 186), the upper plunger 186 tends to drag upward the sintering mold when lifted up for removal from the sintering mold. In order to prevent the drag of the sintering mold by the upper plunger 186, a clamping mechanism (not shown) is provided on the press unit 18 for clamping the sintering mold when the upper plunger 186 is lifted up for removal from the sintering mold.

On page 31, delete the first full paragraph and insert therefor:

With reference to Figs. 14 and 15, the take-out unit 20 serves to sequentially pick up from the carrier 223 trays with sintering molds having been subjected to the pressing operation in the press unit 18 and send them to the next process station. The take-out unit 20 comprises an elevator 200 having a construction similar to the elevator 120 of the sintering mold dispenser unit 12; therefore, like parts and elements are designated by like reference numerals and not described in detail for simplicity. A primary difference between the elevator 200 of the take-out unit 20 and the elevator 120 of the sintering mold dispenser unit 12 resides in that the latter serves to sequentially lift down trays with sintering molds placed thereon (i.e., sintering-mold-and-trays) and dispense them onto the carrier 233, while the former serves to sequentially pick up or take out sintering-mold-and-trays from the carrier 223 and lift up them to a conveyor line. The take-out unit 20 further comprises a first transfer mechanism 201 for transferring a sintering-mold-and-tray from the carrier 223 to the elevator 200 and a second transfer mechanism 210 for transferring a sintering-mold-and-tray from the elevator 200 to the conveyor line for conveying them to the next process station.

Delete the paragraph bridging pages 32 and 33 and insert therefor:

The second transfer mechanism 210 comprises a launcher cylinder (a hydraulic cylinder serving as an actuator) 211 for launching a lifted-up tray from the uppermost position in the elevator 200 onto the conveyor line. In operation, when the carrier 223 carrying a tray has reached the take-out unit 20, the lift cylinder 207 is operated to lift up the tray. Then, the hydraulic cylinder 205 is operated to move the pushing cross bar 206 from the right to the left in Fig. 14, so that the tray is moved by the pushing cross bar 206 to the position at which the tray, having a sintering mold placed thereon, is loaded on the support bars 128 of the elevator 200. The tray thus loaded on the support bars 128 is lifted up by the elevator 200 to the uppermost

position in the elevator 200, and then pushed out of the elevator 200 to the left in Fig. 14 and launched onto the conveyor line by the launcher cylinder 211.

Delete the paragraph bridging pages 33 and 34 and insert therefor:

Sintering molds al are individually placed on associated trays J during transportation through the apparatus 10. As described, the trays J have an opening H formed therein. When the sintering mold dispenser unit 12 has dispensed onto the carrier 223 a tray J having a sintering mold a1 placed thereon, the carrier 233 is operated to move sequentially to the selected ones of the powder filling mechanisms 14 in the order appropriate for forming the plurality of powder layers in the sintering mold. When the carrier 223 is moved to the first of the selected powder filling mechanisms (typically, the carrier 223 is moved first to the powder filling mechanism located at the position A or position K), it is stopped under that powder filling mechanism and then positioned to the powder filling position of that mechanism with precision. Then, the receiving plate 230 is lifted up to raise the sintering mold al with the tray J to a predetermined level, at which the upper end of the sintering mold al is received in the opening 141a of the support plate 141 of the powder filling mechanism. At the same time, the push-up member 234 is lifted up a predetermined distance relative to the receiving plate 230 so as to raise the lower press core e to such a level that is appropriate for the filling of a desired amount of powder material into the sintering mold for the first powder layer. Then, the powder filling mechanism is operated in the manner described above so that the desired amount of powder material is filled into the bore of the sintering mold al. When the powder filling operation has been done, the sintering mold is transported by the carrier 223 to the pressing position of the press unit 18, which then serves to press at a desired pressure the amount of powder material in the sintering mold, so as to form a pre-compressed powder compact. If another powder filling operation has to be carried out for the next powder layer to be formed in the sintering mold, either the sintering mold is displaced upward relative to the powder compact or the powder compact is displaced downward relative to the sintering mold while the powder compact is kept pressed, such that the vertical position of the powder compact within the sintering mold is adjusted to such a position that is appropriate for the filling of a desired amount of powder material into the sintering mold for the next powder layer. Then, the press unit 18 releases the sintering mold al, and the carrier 223

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transports the sintering mold al to the measuring position of the measure unit 16, at which the weight of the powder material in the sintering mold is measured in the manner described above.

Page 38, delete the 1st full paragraph and insert therefor:

With reference to Fig. 17, the lift/support unit 25A comprises: a base plate 251A; a plurality of vertical guide rods 252A fixedly mounted on the base plate 251A; a lift bed 253A guided by the vertical guide rods 252A and driven by a feed screw mechanism of a known type (not shown) for vertical displacement; a vertical screw spindle 254A supported by the lift bed 253A and driven by a drive motor (an electric motor) 256A of a known type; and a lower plunger 255A guided by the lift bed 253A for vertical displacement. The lower plunger 255A is received in a center hole formed in the upper end of the lift bed 253A and is capable of projecting upward from the top surface of the lift bed 253A. The lower plunger 255A has a vertical threaded hole extending therethrough, with which the vertical screw spindle 254A is in thread engagement, so that by rotation of the screw spindle 254A the lower plunger 255A is lifted up/down relative to the lift bed 253A. The lower plunger 255A, when lifted up, enters in the opening 14laA of the support plate 141A of the powder filling mechanism 14A so as to push up the lower press core e fitted in the sintering mold. The upper end of the lift bed 253A is capable of engaging with the bottom of a tray so as to lift up the tray.

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Page 41, delete the 1st full paragraph and insert therefor:

The movable base plate 224B has five stop mechanisms 270B one of each of the five openings 226aB, for limiting upward displacement of a sintering mold al' placed on the movable base plate 224B. Each stop mechanism 270B comprises: a pair of support blocks 271B provided on opposite sides of the opening 226aB and fixedly mounted on the base plate 224B; a pair of engagement pins 272B each provided on the top of the associated one of the support blocks 271B and having a stem and a flat, enlarged head; and a stop member 273B capable of placement on and attachment to the tops of the support blocks 271B. The stop member 273B has a central opening 274B for receiving the upper portion of a sintering mold al' and a pair of recesses 275B for receiving the stems of the engagement pins 272B. The stop mechanisms 270B is adapted for a manual setting. After a sintering mold al' is placed in position on the movable base plate, the stop member 273B is placed on the tops of the support blocks 271B as shown by imaginary lines

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